3.4 AIRSPACE

Airspace in Hawai'i is well managed and is principally controlled, wherein air traffic control service is provided to aircraft in accordance with individual airspace classifications. All aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements. Flight rules are well understood by both civilian and military pilots, and well-established procedures are in place to manage airspace use.

3.4.1 Introduction/Region of Influence

Airspace, which lies above a nation and comes under its jurisdiction, is generally viewed as being unlimited. However, for aviation purposes, it is a finite resource that can be defined vertically and horizontally, as well as chronologically. The scheduling, or time dimension, is a very important factor in airspace management and air traffic control.

For this document, the ROI for airspace is that over and surrounding SBMR, WAAF, DMR, KTA, and KLOA on O'ahu and PTA on the island of Hawai'i (Figures 3-1 and 3-2). The affected airspace environment is described below in terms of its principal attributes, namely controlled and uncontrolled airspace, special use airspace, military training routes, en route airways, airports and airfields, and air traffic control. Jet routes, all above 18,000 feet (5,486 meters), are well above the activities proposed and are thus not considered as part of the ROI.

The Federal Aviation Administration (FAA) regulates military operations in the National Airspace System through the implementation of FAA Handbook 7400.2E and FAA Handbook 7610.4J, Special Military Operations. The latter was jointly developed by the DOD and FAA to establish policy, criteria, and specific procedures for air traffic control planning, coordination, and services during defense activities and special military operations.

Additional regulations and laws pertaining to the use of airspace in the ROI are provided in Appendix F.

3.4.2 Resource Overview

There are two categories of airspace or airspace areas: the first category is restricted, prohibited, and regulatory areas (the last consisting of controlled airspace [Class A, B, C, D, and E airspace areas, in descending order of restrictive operating rules]); the second category of airspace is nonregulatory, consisting of military operations areas (MOAs), warning areas, alert areas, and controlled firing areas. Within these two categories, there are four types: controlled, uncontrolled, special use, and other airspace. The categories and types of airspace are dictated by the complexity or density of aircraft movements, the nature of the operations conducted within the airspace, the level of safety required, and the national and public interest.

Figure 3-1
O‘ahu Airspace Region of Influence (ROI)

Figure 3-2
Hawai'i Airspace Region of Influence (ROI)

O'ahu

Controlled/Uncontrolled Airspace

The distinction between controlled and uncontrolled airspace is important. Within controlled airspace, air traffic control service is provided to aircraft in accordance with the airspace classification. Aircraft operators are also subject to certain pilot qualification, operating rules, and equipment requirements. Within uncontrolled airspace, no air traffic control service to aircraft is provided, other than possible traffic advisories when the air traffic control workload permits and radio communications can be established (Illman 1993). Most of the airspace above O'ahu is controlled airspace.

The airspace over southern O'ahu is dominated by the Class B airspace that lies above and around Honolulu International Airport. Its "upside-down wedding cake" layers are typical of the Class B airspace that surrounds busy airports. It consists of a core surface area, surrounded by several layers of varying floor altitudes but the same ceiling altitude of the core area. Below the Class B layers is Class E controlled airspace, with a floor 700 feet (213 meters) above the surface (Figure 3-1).

Kalaeloa Airport (John Rodgers Field) to the west of Honolulu and Kāne'ohe Bay Marine Corps Airfield on the east coast of O'ahu are covered by Class D airspace from the surface to 2,500 feet (762 meters) above the airport elevation. WAAF in central O'ahu is also covered with Class D airspace, with a ceiling of 3,300 feet (1,006 meters). Elsewhere, the airspace not designated as Class A, B, C, D, or E airspace is uncontrolled, or Class G, airspace from the surface to a ceiling of either 700 or 1,200 feet (213 or 366 meters). Above this, the rest of the island is covered with either Class E controlled airspace or special use airspace, which is discussed separately below.

Appendix F provides a full definition of the different classes of airspace and an explanatory diagram.

Special Use Airspace

O'ahu has several special use airspace areas, including the R-3109 and R-3110 restricted area complex over northwestern O'ahu and the A-311 alert area in northern O'ahu, extending over the western side of the Ko'olau Mountain Range, from east of Mililani Town almost to Kahuku Point. Lying just three nautical miles (a nautical mile is 6,076 feet [1,852 meters]) off the north shore of O'ahu, is the W-189 warning area (Figure 3-1). The effective altitudes, time of use, and controlling agencies are given in Table 3-1.

Restricted areas contain airspace within which aircraft, while not wholly prohibited, are subject to restrictions. They denote the existence of unusual, often invisible, hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles. Alert areas are depicted on aeronautical charts to inform nonparticipating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. Warning areas, extending from three nautical miles outward from the coast, contain activities that may be hazardous to either nonmilitary aircraft or other aircraft not involved with the training.

Table 3-1
Special Use Airspace in the O'ahu Airspace ROI

Number/Name	Effective Altitude (feet [meters])	Time Of Use	Controlling Agency
A-311	To 500 (152) AGL	0700-2200	No A/G
R-3109A	To 9,000[1] (2,743)	Intermittent[2]	Honolulu ATCT
R-3109B	9,000 to 19,000[1] (2,743 to 5,791)	Intermittent[2]	Honolulu ATCT
R-3109C	To 9,000[1] (2,743)	Intermittent[2]	Honolulu ATCT
R-3110A	To 9,000[1] (2,743)	Intermittent[2]	Honolulu ATCT
R-3110B	9,000 to 19,000[1] (2,743 to 5,791)	Intermittent[2]	Honolulu ATCT
R-3110C	To 9,000[1] (2,743)	Intermittent[2]	Honolulu ATCT
W-189	To unlimited	0700-2200 M-F 0800-1600 Sa-Sun[3]	Honolulu CERAP

Source: NACO 2002

Notes:
A = Alert area; AGL = Above ground level; ATCT = Air traffic control tower; CERAP = Combined Center Radar Approach Control; No A/G = No air to ground communications; NOTAM = Notice to airmen; R = Restricted; W = Warning area

[1]To, but not including, the indicated altitude
[2]By NOTAM
[3]Other times by NOTAM

Military Training Routes and Number of Aircraft

Although there are no formal, published military training routes on O'ahu, the A-311 Alert Area identified in Figure 3-1 is used for helicopter training exercises, with an average of 3,500 aircraft movements per month. Movements are defined as arrivals, departures, or overflights. WAAF experiences an average of 6,500 movements per month, 90 percent of which involve helicopters. These movement statistics cover all DOD branches, including the Hawai'i Air National Guard (Ahching 2002a, 2002b). Typical training activities include 10 rotary winged aircraft in the air at any one time, although maximum numbers have reached 36 in special circumstances. Deployments currently involve one to two C-130s once or twice a year flying out of Hickam AFB and WAAF.

En Route Airways

There are a number of low altitude en route airways that enter or transect the ROI (Figure 3-1). These airways are referred to as Class E airspace, established in the form of a corridor. The corridor's centerline is defined by radio navigational aids, which form a network serving aircraft up to, but not including, 18,000 feet (5,486 meters) above sea level.

In addition to the commercial traffic that uses the low altitude en route airways, general aviation aircraft use the airspace over O'ahu. This includes all civil aviation operations, other than scheduled air services and unscheduled air transport operations for remuneration or hire. For example, 27 percent of Honolulu International Airport's 915 average daily

operations involve general aviation, along with 98 percent of Ford Island's average of 109 daily operations and 97 percent of DMR's average of 167 daily operations (Table 3-2).

Table 3-2
O'ahu Airport/Airfield or Heliport Operational Statistics

Name	Aircraft Operations/ Day (Average)	Commercial	Transient General Aviation	Local General Aviation	Air Taxi	Military
Honolulu International	915	55%	23%	4%	12%	7%
Ford Island NALF	109			98%		2%
Kāne'ohe Bay Marine Corps Airfield	301			5%		95%
WAAF	207					100%
DMR	167			97%		3%

Sources: AirNav.com 2002; Ahching 2002a; Therrien 2002

Note: Ford Island Navy Landing Airfield (NALF) is closed to civil operations.

The area around Dillingham Airfield on the north shore is indicated on aeronautical charts as a glider operating area, and the area just north of Makapu'u Point on the island's far southeastern coast is a hang glider and ultralight activity area (NACO 2002). In addition, Dillingham Airfield is a center for skydiving, vintage airplane, and aerobatic flights.

Airports and Airfields

Honolulu International Airport lies in the southern part of the airspace use ROI. Honolulu International Airport is Hawai'i's principal airport, with approximately 327,000 operations (takeoffs and landings) per year and 20.15 million passengers in 2001 (HDOT 2002).

In addition to the fixed-wing operations at Honolulu International Airport, commercial tour operator helicopters account for approximately 30 operations per day. Their normal flight routes hug the coast of O'ahu, east of the airport toward Makapu'u Point. They typically either circle the entire Ko'olau Mountain Range, returning back to the airport over Kamehameha Highway, down the central part of O'ahu to Pearl Harbor and the airport, or fly over the Pali Pass. Local fire and ambulance helicopters are also based at the airport.

Kalaeloa Airport, formerly Barbers Point Naval Air Station (NAS), just east of Barbers Point on the coast west of Honolulu, had approximately 184,000 operations in 2001 (HDOT 2002). These were primarily "touch and go" training takeoffs and landings by light-plane pilots, the Hawai'i Air National Guard, and others. US Coast Guard flying operations are based at Kalaeloa Airport.

Other airports on O'ahu include WAAF in central O'ahu, Dillingham Airfield east of Ka'ena Point on the north shore of O'ahu, and Kāne'ohe Bay Marine Corps Airfield on the east coast. Dillingham Airfield had 81,000 operations in 2001, down four percent from 2000 (HDOT 2002). Heliports, for which no operational statistics are available, include The Queen's Medical Center, HECO-Waiau, Kuakini Medical Center, Moanalua Medical Center,

and the Hon Municipal Building, all in Honolulu, and Kualoa Ranch, south of Kahana on the east coast of O'ahu (AirNav.com 2002).

Air Traffic Control

Air traffic in the ROI within the 12 nautical mile territorial waters limit of the United States is managed by the Honolulu Control Facility.

Aviation Safety

All military aircraft fly in accordance with Federal Aviation Regulations (FAR) Part 91 (Air Traffic and General Operating Rules), Subchapter F (Air Traffic and General Operating Rules), which govern such things as operating near other aircraft, right-of-way rules, aircraft speed, and minimum safe altitudes when flying outside special use airspace. Army Regulation 95-1 (Aviation Flight Regulations) covers Army aircraft operations, crew requirements, and flight rules. These regulations have precise requirements for the use of airports, heliports, and other landing areas, local flying rules, and special use airspace. For example, an installation commander having Army aircraft assigned to, attached to, or tenant to his or her command must prepare and publish local flying rules. These rules include the use of tactical training and maintenance test flight areas, arrival and departure routes, and airspace restrictions as appropriate to help control air operations. Traffic pattern altitudes at Army airfields for airplanes are set at 1,500 feet above ground level. Helicopter traffic pattern altitudes are set at least 700 feet above ground level. Installation commanders may set different altitudes based on noise abatement, fly-neighborly policies, or other safety considerations. These are displayed in flight operations and are published in flight information publications for all pilots.

The Army's aviation safety record on O'ahu and the island of Hawai'i has been excellent. In the last ten years there have been only two serious mishaps. The first was the collision of two UH 60 Blackhawks, the Army's tactical transport helicopter, in bad weather over the tactical flight area on SBMR; the second was the crash of an AH-1Cobra, an attack helicopter, at Leader Field on Schofield Barracks, while returning to WAAF on a maintenance test flight. The fatalities were crew members and passengers. All other aircraft incidents have been limited to precautionary landings, or too-fast descents during sling-load training in which concrete blocks are used to simulate the weight of vehicles or water. There have been no mishaps, accidents, or incidents between military aircraft and civilian aircraft in the last 20 years (Sawyer 2003).

Island of Hawai'i

Controlled/Uncontrolled Airspace

Most of the airspace above the northern half of the island of Hawai'i is controlled airspace of various classes. Class G (uncontrolled) airspace extends from the surface to 700 feet (213 meters), except around Kona and Hilo International Airports and BAAF, which are surrounded by Class D airspace (Figure 3-2).

Special Use Airspace

The northern part of the island of Hawai'i has just one special use airspace area, the R-3103 restricted area over PTA in the central part of the island (Figure 3-2). Its effective altitude, time of use, and controlling agency are given in Table 3-3.

Table 3-3
Special Use Airspace in the Hawai'i Airspace ROI

Number/Name	Effective Altitude (feet)	Time Of Use	Controlling Agency
R-3103	To 30,000 (9,144 meters)	Intermittent[1]	Honolulu CERAP

Source: NACO 2002

Notes:
CERAP = Combined Center Radar Approach Control; NOTAM = Notice to airmen; R = Restricted.
[1]By NOTAM issued 12 hours in advance

Military Training Routes and Number of Aircraft.

Although there are no formal, published military training routes on the island of Hawai'i, the R-3103 restricted area identified in Figure 3-2 is used for helicopter training exercises, with an average of 900 aircraft movements per month, 99 percent of which involve helicopters. These movement statistics cover all DOD branches, including the Hawai'i Air National Guard (Ahching 2002a, 2002b). Typical training involve the use of 10 rotary winged aircraft at any one time. During deployment training one or two C-130s would be involved about twice a year.

En Route Airways

In addition to the commercial traffic that use the low altitude en route airways, general aviation aircraft use the airspace over the island of Hawai'i. This includes all civil aviation operations, other than scheduled air services and unscheduled air transport operations for remuneration or hire. For example, 50 percent of Kona International Airport's 281 average daily operations, 28 percent of Hilo International Airport's 316 average daily operations, and 78 percent of 'Upolu Airport's 27 average daily operations involve general aviation (Table 3-4).

Airports and Airfields

Kona International Airport, just north of Keāhole Point, is on the west coast, and Hilo International Airport is on the east coast of the island. Kona International had 160,000 operations and handled 2.64 million passengers in 2001. While aircraft operations were up 10 percent from 2000, the total number of passengers was down 7 percent from 2000. Hilo International had 96,000 operations and handled 1.5 million passengers in 2001. Hilo International Airport similarly experienced an increase in aircraft operations and a decrease in total number of passengers (+17 percent and –7 percent, respectively) compared to 2000. Waimea-Kohala Airport, in the northern part of the island, had approximately 2,500 passengers in 2001, down 4 percent from 2000. No records are available on the number of aircraft operations (HDOT 2002).

Table 3-4
Island of Hawai'i
Airport/Airfield or Heliport Operational Statistics

Name	Aircraft Operations/Day (Average)	Commercial	Transient General Aviation	Local General Aviation	Air Taxi	Military
BAAF	33					100%
Hilo International	316	19%	13%	15%	42%	10%
Ka'ūpūlehu Heliport	33		50%		50%	
Kona International	281	29%	19%	31%	9%	13%
'Upolu Airport	27		78%		3%	19%
Waimea-Kohala Airport	28		10%	24%	60%	5%

Source: AirNav.com 2002

Other airports/airfields in the ROI include BAAF, serving PTA, 'Upolu at 'Upolo Point at the northern tip of the island, and the Pu'u Wa'a Wa'a private airfield off Highway 190, midway between Kona and Waimea. There is a private heliport, Ka'ūpūlehu, on the west coast north of Makatawena, just north of Kona International Airport (Figure 3-2).

Air Traffic Control

The Honolulu Air Traffic Control Center manages air traffic in the ROI within the 12 nautical mile territorial waters limit of the United States.

Aviation Safety

Airspace safety for the island of Hawai'i is similar to the airspace safety described above for O'ahu.